

What is claimed is:

1. An agent that specifically binds focal adhesion kinase and induces apoptosis in a cell that expresses focal adhesion kinase.
2. The agent of claim 1, wherein the agent comprises the amino acid sequence of SEQ ID NO:1 and/or SEQ ID NO: 3 or a variant thereof.
3. The agent of claim 2, wherein the agent is a chimeric molecule that comprises the amino acid sequence of SEQ ID NO :1 and/or 3 and a membrane permeabilization domain.
4. A method for inducing apoptosis in a cancer cell, the method comprising contacting the cancer cell with an agent that specifically binds focal adhesion kinase at a site that is specifically bound by a peptide comprising the amino acid sequences of SEQ ID NO:1 and/or SEQ ID NO: 3.
5. The method of claim 4, wherein the agent comprises the amino acid sequence of SEQ ID NO:1 and/or SEQ ID NO: 3 or variants thereof.
6. A composition comprising SEQ ID NO: 1 and/or SEQ ID NO: 3, fragments, variants or derivatives thereof, wherein the composition binds focal adhesion kinase (FAK) and modulates cellular apoptosis, cell motility and cell metastasis.
7. The composition of claim 6, wherein the composition further comprises a cellular permabilization domain.
8. The composition of claim 6, wherein the composition is administered to a cell.
9. The composition of claim 6, wherein apoptosis is induced in a tumor cell.
10. The composition of claim 6, wherein cell motility is inhibited.
11. The composition of claim 6, wherein metastasis of a cell is inhibited.

12. A method of treating cancer comprising:
administering to a patient a composition comprising SEQ ID NO: 1 and/or SEQ ID NO: 3, derivatives, fragments and variants thereof;
contacting a cancer cell the composition;
binding of the composition to focal adhesion kinase at a site that is specifically bound by a peptide comprising an amino acid sequence of SEQ ID NO:1 and/or SEQ ID NO: 3, derivatives, variants and fragments thereof; and,
treating cancer.
13. The method of claim 12, wherein the composition enters a cell via a cellular membrane.
14. The method of claim 12, wherein the composition induces apoptosis in an abnormal cell expressing focal adhesion kinase.
15. The method of claim 12, wherein the composition inhibits cell motility.
16. The method of claim 12, wherein the composition inhibits metastasis of a tumor cell.
17. The method of claim 12, wherein contacting a cell with the composition induces apoptosis and/or inhibits cell motility and or metastasis.
18. A composition comprising a chimeric molecule comprising amino acid sequence SEQ ID NO:1 and/or SEQ ID NO: 3, derivatives, fragments or variants thereof, and a targeting domain.
19. The composition of claim 18, wherein the targeting domain is a membrane permeabilization domain.
20. The composition of claim 19, wherein the membrane permeabilization domain is an HIV TAT domain.

21. The composition of claim 18, wherein the targeting domain is an antibody specific for a tumor antigen.

22. The composition of claim 21, wherein tumor antigens comprise HER-2/neu; intestinal carboxyl esterase (liver, intestine, kidney); alpha-fetoprotein (liver); M-CSF (liver, kidney); MUC1 (glandular epithelia); p53; PRAME (testis, ovary, endometrium, adrenals); PSMA (prostate, CNS, liver); RAGE-1 (retina); RU2AS (testis, kidney, bladder); survivin; Telomerase; WT1 (testis, ovary, bone marrow, spleen); CA125 (ovarian).

23. A vector expressing amino acids as identified by SEQ ID NO: 1 and/or SEQ ID NO: 3, derivatives, fragments and variants thereof.

24. The vector of claim 23, wherein SEQ ID NO: 1 and/or SEQ ID NO: 3, derivatives fragments and variants thereof are expressed in a tumor cell.

25. A vector comprising a focal adhesion kinase binding chimeric molecule.

26. The vector of claim 25, wherein the chimeric molecule comprises a focal adhesion kinase binding molecule and a second domain.

27. The vector of claim 26, wherein the focal adhesion kinase binding domain is identified by SEQ ID NO: 1 and/or SEQ ID NO: 3, derivatives, fragments and variants thereof.

28. The vector of claim 26, wherein the second domain is an effector molecule.

29. The vector of claim 28, wherein the effector molecule modulates the activity of a tumor cell.

30. The vector of claim 28, wherein the effector molecule is cytotoxic to a tumor cell.

31. The vector of claim 28, wherein the effector molecule is anti-angiogenic.
32. A method of treating a cancer patient comprising:
administering a chimeric fusion protein composition to a patient ; and,
contacting a tumor cell with the chimeric fusion protein composition;
modulating the activity of the tumor cell; thereby,
treating a cancer patient.
33. The method of claim 32, wherein the chimeric fusion molecule comprises a first domain which binds to focal adhesion kinase molecules in or on a cell.
34. The method of claim 33, wherein the focal adhesion kinase molecule binding first domain of the chimeric fusion protein is identified by SEQ ID NO: 1 and/or SEQ ID NO: 3, derivatives, fragments and variants thereof.
35. The method of claim 32, wherein the chimeric fusion protein composition comprises a second domain comprising a cell permeabilization domain.
36. The method of claim 32, wherein the activity of a tumor cell is apoptosis, motility and invasion.
37. The method of claim 32, wherein the chimeric fusion protein composition induces apoptosis in a tumor cell.
38. The method of claim 32, wherein the chimeric fusion protein inhibits cell motility and invasion.
39. The method of claim 32, wherein the chimeric fusion protein inhibits metastasis of a tumor cell.
40. The method of claim 32, wherein the chimeric fusion protein is co-administered with one or more chemotherapeutic agents.

41. The method of claim 40, wherein the chemotherapeutic agent comprises cyclophosphamide (CTX, 25 mg/kg/day, *p.o.*), taxanes (paclitaxel or docetaxel), busulfan, cisplatin, cyclophosphamide, methotrexate, daunorubicin, doxorubicin, melphalan, cladribine, vincristine, vinblastine, and chlorambucil.

42. A method of treating cancer comprising:
administering to a patient a peptide comprising SEQ ID NO: 1 and/or SEQ ID NO: 3, derivatives, fragments and variants thereof;
contacting a cancer cell with the peptide(s);
binding of the peptide(s) to focal adhesion kinase at a site that is specifically bound by a peptide comprising an amino acid sequence of SEQ ID NO:1 and/or SEQ ID NO: 3, derivatives, variants and fragments thereof; and,
treating cancer.

43. The method of claim 42, wherein the peptide(s) enters a cell via a cellular membrane.

44. The method of claim 42, wherein the peptide(s) induces apoptosis in an abnormal cell expressing focal adhesion kinase.

45. The method of claim 42, wherein the peptide(s) inhibits cell motility.

46. The method of claim 42, wherein the peptide(s) inhibits metastasis of a tumor cell.

47. The method of claim 42, wherein contacting a cell with the peptide(s) induces apoptosis and/or inhibits cell motility and or metastasis.